

CLAIMS

WHAT IS CLAIMED IS:

- 5 1. A low viscosity carboxyl-containing polyol composition having a viscosity in the range of about 3,000-100,000 centipoise, and having an oligomer content of less than 30 mg KOH/g.
2. A low viscosity carboxyl-containing polyol amine salt having a viscosity in the range of about 3,000-100,000 centipoise, and having an oligomer content of less than 30 mg KOH/g, said
10 carboxyl being neutralized with an organic amine to provide said carboxyl-containing polyol amine salt.
3. A method for producing the carboxyl-containing polyol of claim 1 comprising reacting a low molecular weight triol with an acid anhydride in the presence of 5-500 ppm of an organic or
15 inorganic acid catalyst.
4. The method of claim 3 wherein said organic or inorganic acid is selected from the group consisting of hydrochloric acid, sulfuric acid, nitric acid, formic acid, propionic acid, p-toluenesulfonic acid, oxalic acid, and combinations thereof.
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5. The carboxy-containing monomer of claim 3, wherein said triol compound is selected from the group consisting of glycerol, trimethylolpropane, trimethylolethane, polyether polyols, and combinations thereof.
- 25 6. The carboxy-containing monomer of claim 1, wherein said acid anhydride is selected from the group consisting of maleic anhydride, phthalic anhydride, succinic anhydride, glutaric anhydride, and mixtures thereof.
7. The carboxy-containing monomer of claim 1, wherein said carboxyl-containing monomer
30 is made in the presence of 50-250 ppm of said organic or inorganic acid.

8. The carboxy-containing monomer of claim 7, wherein said carboxyl-containing monomer is made in the presence of 100-200 ppm of said organic or inorganic acid.

9. The carboxy-containing monomer of claim 1, wherein said viscosity of said carboxyl-containing monomer ranges from 3,000 to 50,000 cps.

10. The carboxy-containing monomer of claim 9, wherein said viscosity of said carboxyl-containing monomer ranges from 3,000 to 20,000 cps.

11. The carboxy-containing monomer of claim 1, wherein said free oligomer content of said carboxyl-containing monomer ranges from about 2 to 30 mg KOH/g.

12. The carboxy-containing monomer of claim 11, wherein said free oligomer content of said carboxyl-containing monomer ranges from about 2 to 20 mg KOH/g.

13. A method of preparing a carboxyl-containing monomer for use in preparation of a polyurethane polymer, comprising the step of combining a low molecular weight polyol compound and an acid anhydride, in the presence of 25-500 ppm of an organic or inorganic acid, to produce said carboxyl-containing monomer, said carboxyl-containing monomer having a viscosity in the range of about 3,000 to about 100,000 cps and having a free oligomer content of less than about 30 mg KOH/g.

14. The method of claim 13, wherein said low molecular weight polyol compound comprises from two to four hydroxyl groups

15. The method of claim 14, wherein said low molecular weight polyol compound is a triol compound possessing three hydroxyl groups.

16. The method of claim 15, wherein said triol compound is selected from the group consisting of glycerol, trimethylolpropane, trimethylolethane, polyether polyols, and combinations thereof.

17. The method of claim 16, wherein said low molecular weight polyol compound is a polyether triol.

18. The method of claim 13, wherein said acid anhydride is selected from the group consisting of maleic anhydride, phthalic anhydride, succinic anhydride, glutaric anhydride, and mixtures thereof.

19. The method of claim 13, wherein said carboxyl-containing monomer is made in the presence of about 50-250 ppm of said organic or inorganic acid.

20. The method of claim 19, wherein said carboxyl-containing monomer is made in the presence of an organic or inorganic acid selected from the group consisting of hydrochloric acid, sulfuric acid, nitric acid, formic acid, propionic acid, p-toluenesulfonic acid, oxalic acid, and combinations thereof.

21. The method of claim 13, wherein said viscosity of said carboxyl-containing monomer ranges from about 3,000 to 50,000 cps.

22. The method of claim 21, wherein said viscosity of said carboxyl-containing monomer ranges from about 3,000 to 20,000 cps.

23. The method of claim 13, wherein said free oligomer content of said carboxyl-containing monomer ranges from about 2 to 30 mg KOH/g.

24. The method of claim 23, wherein said free oligomer content of said carboxyl-containing monomer ranges from about 2 to 20 mg KOH/g.

25. A prepolymer for use in preparing a polyurethane polymer, said prepolymer being the reaction product of (1) the carboxyl-containing monomer of claim 1, and (2) a polyisocyanate compound, said prepolymer having a viscosity in the range of about 3,000 to about 100,000 cps.

26. The prepolymer of claim 25, wherein said polyisocyanate is selected from the group consisting of diisocyanate, 4,4'-dicyclohexylmethane diisocyanate, isophorone diisocyanate, 1,4'-tetramethylene diisocyanate, 1,10-decamethylene diisocyanate, 1,12-dodecamethylene diisocyanate, toluene-2,4- or 2,6-diisocyanate, 1,5-naphthalene diisocyanates, 4-methoxy-1,3-phenylene diisocyanate, 4-chloro-1,3-phenylene diisocyanate, 2,4'-diisocyanatodiphenyl ether, 5,6-dimethyl-1,3-phenylene diisocyanate, 2,4-dimethyl-1,3-phenylene diisocyanate, 4,4'-diisocyanatodiphenylether, benzidine diisocyanate, 4,4'-diisocyanatodibenzyl, methylene-bis(4-phenylisocyanate), 1,3-phenylene diisocyanate, 4,4'-diphenylmethane diisocyanate, 2,4'-diphenylmethane diisocyanate, hexamethylene diisocyanate, 4,4'-dicyclohexylmethane diisocyanate, 1,12-dodecanediisocyanate, 2,4,4-trimethylhexamethylene diisocyanate, xylylene diisocyanate, tetramethyl-xylylene diisocyanate, polymethylene polyphenyl isocyanate, and combinations thereof.

27. A prepolymer for use in preparing a polyurethane polymer, said prepolymer being the reaction product of (1) carboxyl-containing polyol amine salt of claim 2, and (2) a polyisocyanate compound, said prepolymer having a viscosity in the range of about 3,000 to about 100,000 cps.

28. The prepolymer of claim 27, wherein said polyisocyanate compound is selected from the group consisting of diisocyanate, 4,4'-dicyclohexylmethane diisocyanate, isophorone diisocyanate, 1,4'-tetramethylene diisocyanate, 1,10-decamethylene diisocyanate, 1,12-dodecamethylene diisocyanate, toluene-2,4- or 2,6-diisocyanate, 1,5-naphthalene diisocyanates, 4-methoxy-1,3-phenylene diisocyanate, 4-chloro-1,3-phenylene diisocyanate, 2,4'-diisocyanatodiphenyl ether, 5,6-dimethyl-1,3-phenylene diisocyanate, 2,4-dimethyl-1,3-phenylene diisocyanate, 4,4'-diisocyanatodiphenylether, benzidine diisocyanate, 4,4'-diisocyanatodibenzyl, methylene-bis(4-phenylisocyanate), 1,3-phenylene diisocyanate, 4,4'-diphenylmethane diisocyanate, 2,4'-diphenylmethane diisocyanate, hexamethylene diisocyanate, 4,4'-dicyclohexylmethane diisocyanate, 1,12-dodecanediisocyanate, 2,4,4-trimethylhexamethylene diisocyanate, xylylene diisocyanate, tetramethyl-xylylene diisocyanate, polymethylene polyphenyl isocyanate, and combinations thereof.

